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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/711,107	08/24/2004	Charles Steven Korman	148263-1	5106
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EXAMINER TUMMINELLI, ALEXANDER S				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
12/31/2008		ELECTRONIC		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

**Application No.**

10/711,107

**Applicant(s)**

KORMAN ET AL.

**Examiner**

ALEXANDER S. TUMMINELLI

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 25-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/55/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

1. In view of the appeal brief filed on 09/24/2008, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Alexa D. Neckel/

Supervisory Patent Examiner, Art Unit 1795

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 25-36, 43, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori et al (US 6215060 B1), in view of Kukulka et al (US 2004/0089339 A1).

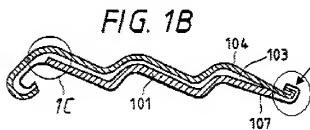
With respect to claims 25 and 43, Komori et al. discloses a photovoltaic integrated building component (col. 1; lines: 31-33), and Komori discloses that it is well known in the art to utilize a polymer substrate/polymer film substrate (col. 1; lines: 10-14). Komori further discloses a first solar cell laminate assembly (Figure 1A & 4A) and a second solar cell laminate assembly disposed over the polymer substrate (Figure 1A &

4A), each solar cell laminate assembly including a solar cell assembly (401), each solar cell assembly having a first side for receiving photons and a second side for producing an electrical current (Figure 10A & col. 14; lines: 53-67), each solar cell laminate assembly further including a backplane (107) assembly disposed between each solar cell assembly (101) and the polymer substrate (105) (Figure 1A & IC), the backplane (107) assembly including a metal layer (col. 13; lines: 40-50); and a sealing member/copper tab (505/504) operably connected to the first and second solar cell laminate assemblies (col. 13; lines: 45-50), the sealing member (505/504) including an electrical connector (504) in electrical contact with the metal layer of the backplane (107) assembly to provide electrical interconnection between the first and second solar cell laminate (101) assemblies as shown in Figure 5A-5C(col. 14; lines: 53-67). However, Komori et al does not explicitly teach that the backplane assembly provides an electrical interconnection between the first and second solar cell laminate assemblies.

Kukulka et al teaches a solar cell structure (abstract), that includes a backplane assembly (bypass diode structure, Fig. 3/40), that provides an electrical interconnection between the first and second solar cells (paragraphs [0028]-[0030]). Kukulka et al also teaches that the by-pass diode structure protects against reverse-bias damage and that the by-pass diode structure is placed at the backside of the solar cell, so that the by-pass diode does not obscure the front side of the solar cell and reduce its efficiency (paragraph [0008]).

Komori et al and Kukulka et al are of analogous art because both pertain to solar cell structures. It would be obvious to one of ordinary skill in the pertinent art at the time of the invention to use the by-pass diode structure of Kukulka et al within the device of Komori et al for the purpose of protecting against reverse-bias damage while not obscuring the front side of the solar cell and reducing its efficiency.

As to claim 26, Komori et al. discloses the component according to claim 25, wherein the sealing member is operably connected to the first and second solar cell laminate assemblies by a snap-fit feature for engaging a snap-fit feature of the first and second solar cell laminate assemblies as shown in Figure 1B.



With respect to claim 27, Komori et al. discloses the component according to Claim 25, wherein the polymer substrate is capable of being directly attached to a rafter of a building structure (col. 1: lines: 46-55).

In regard to claim 28, Komori et al. disclose component according to claim 25, wherein the polymer substrate is capable of being directly attached to a batten of a building structure (col. 1; lines: 46-55).

As to claim 29, Komori et al. disclose component according to claim 25, further comprising an encapsulant/resin for encapsulating each solar cell assembly (col. 10; lines: 45-51 ).

With respect to claim 30, Komori et al. discloses component according to claim 29, further comprising a glass substrate/glass fiber disposed over the encapsulant (col. 10; lines: 26-34).

As to claim 31, Komori et al. discloses component according to claim 25, wherein the backplane assembly further includes an insulating substrate/insulating film (206) disposed between the polymer substrate/(107) and the metal layer (col. 13; lines: 29-50).

In regards to claim 32, component according to claim 25, wherein each solar cell assembly comprises a plurality of silicon wafers/amorphous silicon layers (col. 9; lines: 7-15).

As to claim 33, Komori et al. the component according to claim 32, wherein the plurality of silicon wafers (col. 9; lines: 7-15) (Figure 4a) are mounted on a polymer flex substrate. Komori discloses that it is well known in the art to utilize a polymer substrate/polymer film substrate (col. 1; lines: 10-14).

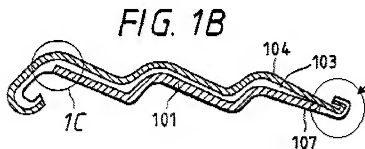
In regard to claim 34, Komori et al. the component according to claim 33, wherein electrical current produced by each silicon wafer is transported to an edge connector (504) of the metal layer (503a,b) by an interconnect pattern in a series string (Figure 5C) (col. 14; lines: 52-65).

With respect to claims 35 and 48, Komori et al. discloses the component according to claims 34 and 43 above, wherein the series string includes a diode/visual indication for allowing a failed series string to be bypassed/visual indication of electrical interconnection between the solar cell laminates (col. 23; lines: 25-30).

As to claim 36, Komori et al. discloses the component according to claim 34, wherein the edge connector (504) includes a conductive extension Figure 5C that extends normal to the polymer substrate along a periphery of the first and second solar cell laminate assemblies Figure 5C.

6. Claims 37-39, 42, 49, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (US 6,215,060), in view of Kukulka et al (US 2004/0089339 A1), as applied to the above claims 25 and 43, and further in view of Konold (US 6,630,622).

In regard to claims 37, 39, 42, and 49, modified Komori et al. disclose the component according to the above claims 25 and 43, further discloses a keyed channel for facilitating attachment of the component to a building structure.



However, both Komori et al and Kukulka et al fail to disclose a plastic frame disposed about a periphery of the first and second solar cell laminate assemblies and the heat sink assembly is embedded in the plastic frame such that the heat sink is in thermal communication with the conductive extension for dissipating heat from the first and second solar cell laminate assemblies.



Konold discloses a solar cell (col. 1; lines: 28-35) and further discloses a plastic frame around the solar collector panel overlaying lip on the to the side members (col. 5; lines: 16-22) (Figure 5). Konold discloses a thermal insulating material/heat sink in the interior/embedded of the surface of the frame (col. 8; lines: 30-34) and further teaches that the panel is designed to be self contained and compact (col. 5; lines: 37-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a plastic frame around the solar panel as taught by Konold to the solar cell device of modified Komori et al. in order that the solar panel is self contained and compact.

In regard to claim 38, Komori et al. discloses component according to claim 37, further comprising a heat sink assembly/resin fillers (103) (resins that absorbs heat) in thermal communication with the conductive extension for dissipating heat from the first and second solar cell laminate assemblies (col. 10; lines: 45-50).

As to claim 52, modified Komori discloses the component according to Claim 43, but fails to discloses wherein the plastic frame includes a keyed channel for facilitating attachment of the component to a batten of a building structure.

Konold discloses a solar cell (col. 1; lines: 28-35) and further discloses a plastic frame around the solar collector panel overlaying lip on the to the side members (col. 5; lines: 16-22) (Figure 5). Konold further discloses means bolts/rivets for facilitating attachment to the building structure as shown in (co1.4; lines: 44-51) includes: a plurality of slots/holes configured in the frame receptive to a fastening means/bolts/rivets and a keyed channel/L-channels configured (co1.4; lines: 44-51) in

the frame receptive to a batten/bottom cover plate (406) (col. 1.5; lines: 34-37). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a keyed channel for facilitating attachment of a component as taught by Konold to the solar cell device of modified Komori in order to facilitate the attachment to a building structure.

7. Claims 40 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (US 6,215,060), Kukulka (US 2004/0089339), and Konold (US 6,630,622) as applied to the above claims 38 and 49, and in further view of Kawaguchi et al. (US 5,250,265).

As to claims 40 and 50, Komori et al. discloses the component according to the above claims 38 and 49, but fails to disclose wherein the heat sink assembly comprises cooling fins insert molded with the plastic frame.

Konold discloses a solar cell (col. 1; lines: 28-35) and further discloses a plastic frame around the solar collector panel overlaying lip on the to the side members (col. 5; lines: 16-22) (Figure 5) and further teaches that the panel is designed to be self contained and compact (col. 5; lines: 37-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a plastic frame around the solar panel as taught by Konold to the solar cell device of modified Komori et al. in order that the solar panel is self contained and compact. However, modified Komori in view of Konold fails to disclose cooling fins.

Kawaguchi discloses a solar cell (abstract) and further discloses enhancing the cooling of the solar cell (col. 13; lines: 6-8) by way of installed cooling fins which

enhance the effect of cooling (col. 12; lines: 52-56). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate cooling fins to the solar cell as taught by Kawaguchi et al. to the modified solar cell panels of Komori et al. in order to enhance the cooling of the solar cell.

8. Claims 41 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (US 6,215,060), Kukulka (US 2004/0089339), and Konold (US 6,630,622) as applied to the above claims 38 and 49 respectively, and in further view of Kapany et al. (US 3, 985,116).

As to claims 41 and 51, modified Komori et al. discloses component according to the above claims 38 and 49 respectively, but fails to disclose wherein the heat sink assembly comprises a high emissivity layer molded in the plastic frame.

Konold discloses a solar cell (col. 1; lines: 28-35) and further discloses a plastic frame around the solar collector panel overlaying lip on the to the side members (col. 5; lines: 16-22) (Figure 5) and further teaches that the panel is designed to be self contained and compact (col. 5; lines: 37-38). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a plastic frame around the solar panel as taught by Konold to the solar cell device of modified Komori et al. in order that the solar panel is self contained and compact. However, Konold fails to disclose a high emissivity layer.

Kapany discloses a solar cell (Figure 1 & abstract) and further discloses a black body to provide for a high emissivity of approximately one to have ideal absorbing portion with a high absorption for light wavelengths in the 0.3 to 2 micron range (col. 1;

lines: 52-60). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a black body with high absorption as taught by Kapany to the modified solar cell panels of modified Komori et al. in order to have ideal absorbing portion of the for wavelengths of 0.3 to 2 microns.

9. Claims 45 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (US 6,215,060) in view of Kukulka (2004/0089339), as applied to claim 43 above, and in further view of Gould et al. (US 4,273,106).

In regard to claims 45 and 47, modified Komori et al. discloses component according to claim 43, but fails to disclose wherein each solar cell laminate assembly includes a channel for receiving an O-ring for providing a seal between the sealing member and each solar cell laminate assembly and further comprising a fastener for biasing the sealing member towards each solar cell laminate assembly to provide a seal there between.

Gould et al. discloses a solar panel (abstract) and further discloses a groove recess for the installation of an O-ring seal for sealing the surface of the of the solar panel insert to the interior (col. 4; lines: 17-20). Gould further teaches that the top and bottom pieces are then seam welded/fastened around a peripheral flange and in the mating surfaces to between the channels to completely seal the panel (col. 2; lines: 30-33). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate an O-ring for the solar panel as taught by Gould et al. to the solar panel device of modified Komori in order to seal the surface of the of the solar panel insert to the interior.

10. Claims 44 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komori (US 6,215,060) in view of Kukulka (US 2004/0089339) as applied to claim 43 above, and in further view of Kuwahara et al. (US 6,179,639).

As to claims 44 and 46, modified Komori et al. discloses component according to claim 43, further comprising an electrical buswork as shown in Figure 5C, but fails to disclose that the buswork is connected to the male electrical connector for providing a conduit for generated power from each solar cell assembly and wherein the first electrical connector comprises a female electrical connector, and wherein the second electrical connector comprises a male electrical connector.

Kuwahara et al. discloses a solar panel with electrical connectors (abstract) and further discloses a male plug terminal and a female terminal (col. 1 ; lines: 13-29). Kuwahara et al. discloses that the this invention provides an electrical connector in which a male fitting part can be fitted easily into a female fitting part while they are prevented from being easily disconnected from each other and this allows a connection operation to be performed with high efficiency (col. 2; lines: 10-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate a male and female connectors to the electrical connections of the solar panel as taught by Kuwahara et al. to the solar panel device of modified Komori in order to provide for an electrical connector in which a male fitting part can be fitted easily into a female fitting part while they are prevented from being easily disconnected from each other and this allows a connection operation to be performed with high efficiency.

***Response to Arguments***

11. Applicant's arguments, see page 5, lines 1-12, filed June 30, 2008, with respect to the rejection(s) of claim(s) 25-52 under U.S.C. 102 and 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Komori et al, in view of Kukulka et al. Applicant's argument that the backplane assembly of Komori et al does not teach an electrical connection between the first and second solar cell laminate assemblies has been found persuasive. However, a new rejection has been issued of Komori et al in view of Kukulka et al, wherein Kukulka et al teaches a by-pass diode positioned at the back of the solar cell assemblies (as a backplane assembly) which has an electrical connection between the back sides of adjacent solar cell assemblies.

***Conclusion***

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER S. TUMMINELLI whose telephone number is (571)270-3878. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm EST, Alt. Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa Neckel can be reached on (571)272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. S. T./  
Examiner, Art Unit 1795

/Alexa D. Neckel/  
Supervisory Patent Examiner, Art Unit 1795